



No.3012

# 2SA1683/2SC4414

PNP/NPN Epitaxial Planar Silicon Transistors

Low-Frequency General-Purpose Amp,  
Low-Frequency Power Amp Applications

### Features

- Adoption of FBET process
- High breakdown voltage:  $V_{CEO} > 80V$

( ): 2SA1683

### Absolute Maximum Ratings at $T_a = 25^\circ C$

			unit
Collector to Base Voltage	$V_{CBO}$	(-)100	V
Collector to Emitter Voltage	$V_{CEO}$	(-)80	V
Emitter to Base Voltage	$V_{EBO}$	(-)5	V
Collector Current	$I_C$	(-)500	mA
Collector Current (Pulse)	$I_{CP}$	(-)800	mA
Base Current	$I_B$	(-)100	mA
Collector Dissipation	$P_C$	300	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature	$T_{stg}$	-55 to +150	$^\circ C$

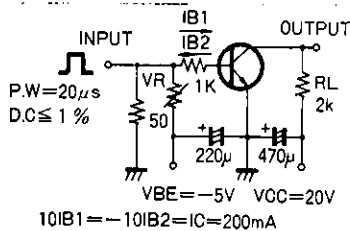
### Electrical Characteristics at $T_a = 25^\circ C$

			min	typ	max	unit
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = (-)60V, I_E = 0$			(-)0.1	$\mu A$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = (-)4V, I_C = 0$			(-)0.1	$\mu A$
DC Current Gain	$h_{FE(1)}$	$V_{CE} = (-)5V, I_C = (-)50mA$	100*		400*	
	$h_{FE(2)}$	$V_{CE} = (-)5V, I_C = (-)400mA$	60			
Gain-Bandwidth Product	$f_T$	$V_{CE} = (-)10V, I_C = (-)10mA$		120		MHz
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C = (-)400mA, I_B = (-)40mA$	(-0.20)	0.16	(-)0.5	V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C = (-)400mA, I_B = (-)40mA$	(-)0.9		(-)1.2	V
Output Capacitance	$c_{ob}$	$V_{CB} = (-)10V, f = 1MHz$		(7)5		pF
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C = (-)10\mu A, I_E = 0$	(-)100			V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C = (-)1mA, R_{BE} = \infty$	(-)80			V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E = (-)10\mu A, I_C = 0$	(-)5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		50		ns
Storage Time	$t_{stg}$	"		(500)650		ns
Fall Time	$t_f$	"		(80)90		ns

\*: The 2SA1683/2SC4414 are classified by 50mA  $h_{FE}$  as follows:

100 R 200	140 S 280	200 T 400
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### Switching Time Test Circuit

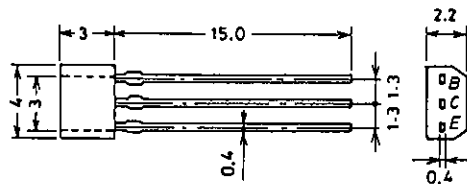


(For PNP, the polarity is reversed.)

Unit(Resistance:  $\Omega$ , Capacitance: F)

### Package Dimensions 2033

(unit: mm)



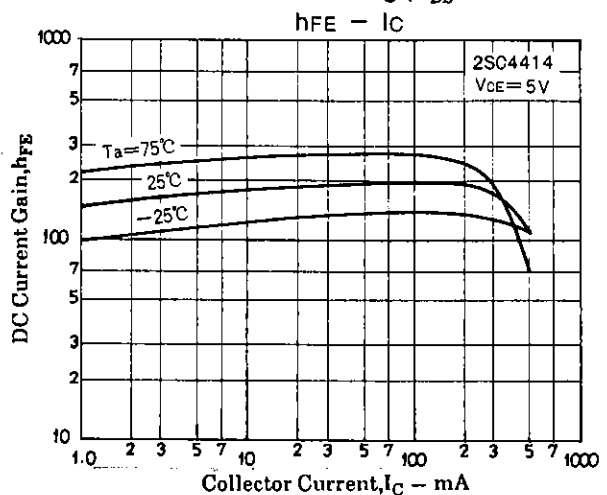
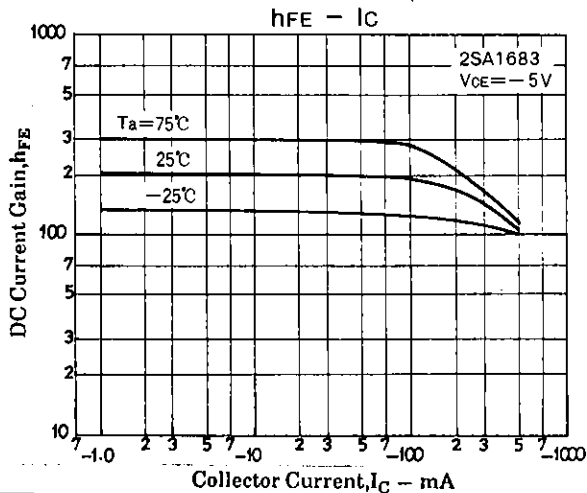
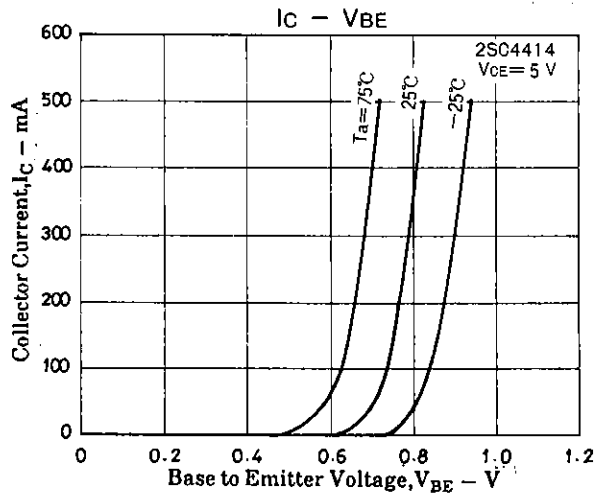
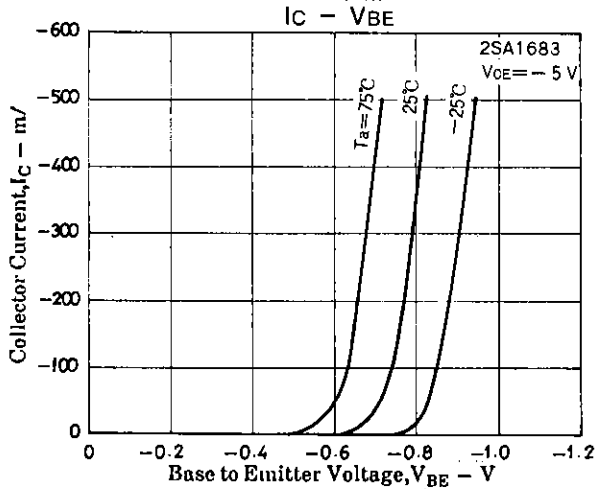
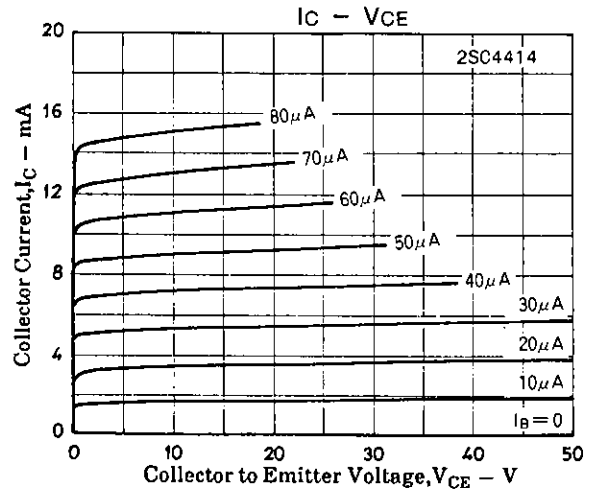
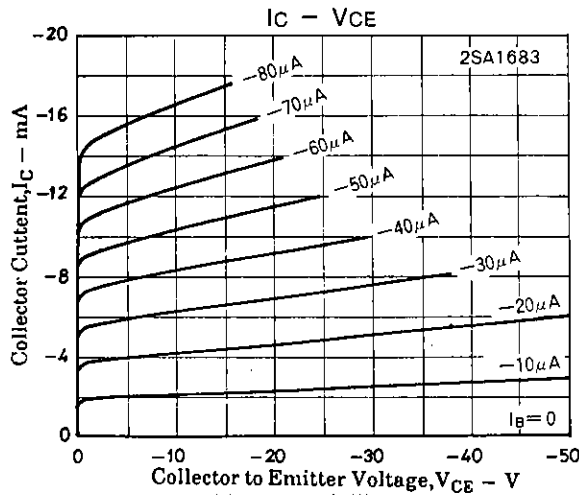
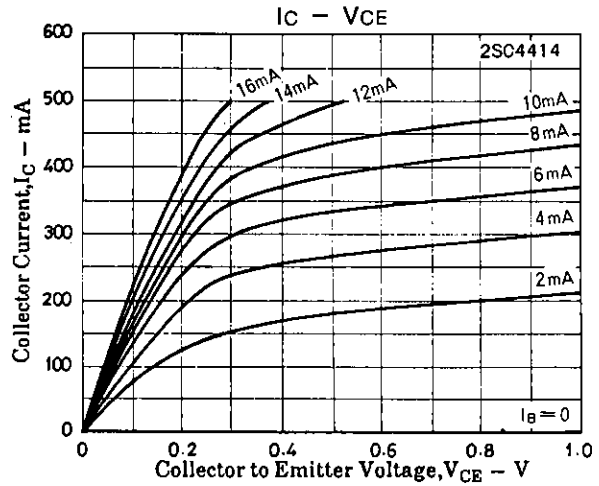
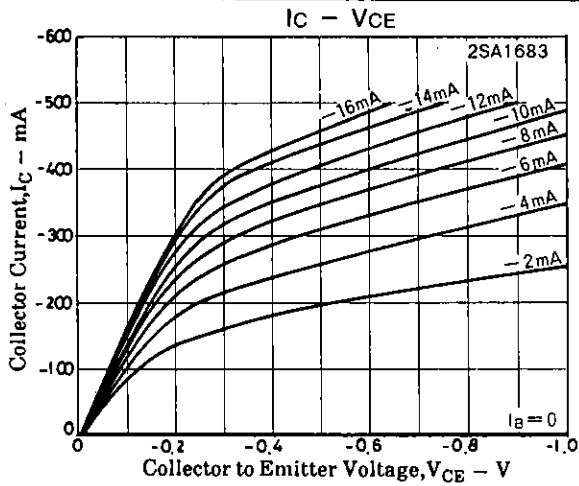
B: Base  
C: Collector  
E: Emitter

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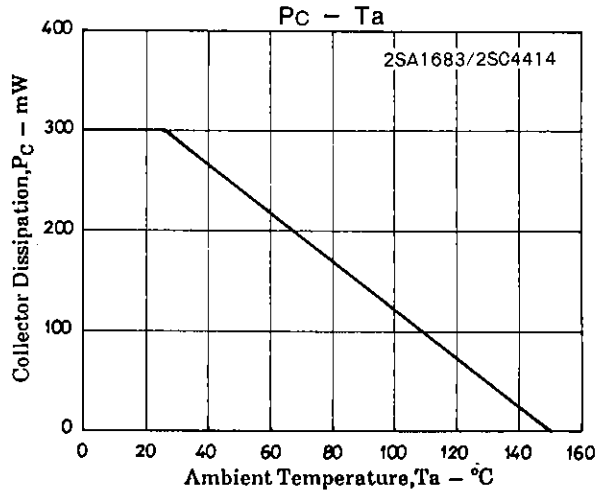
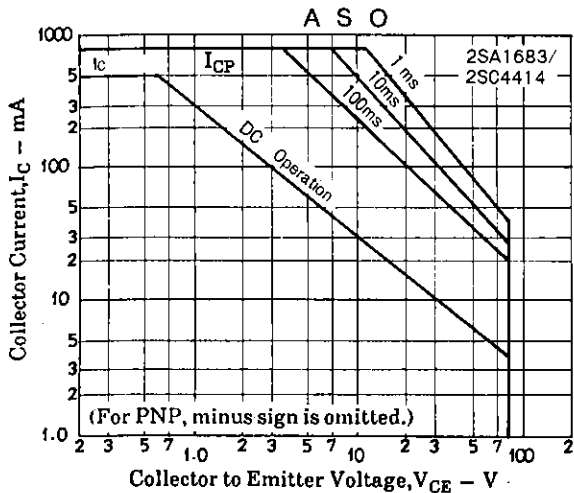
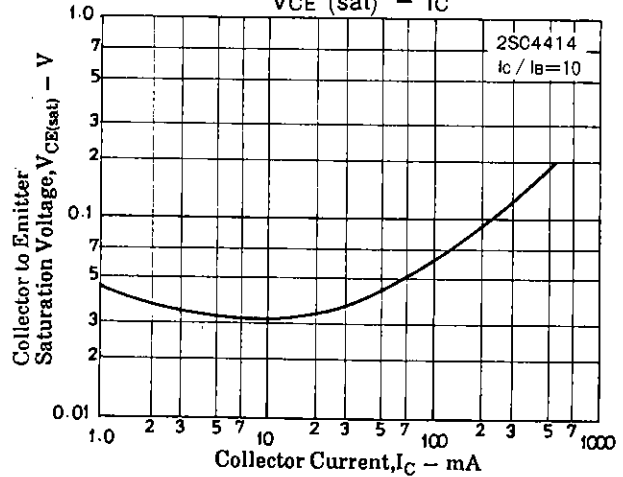
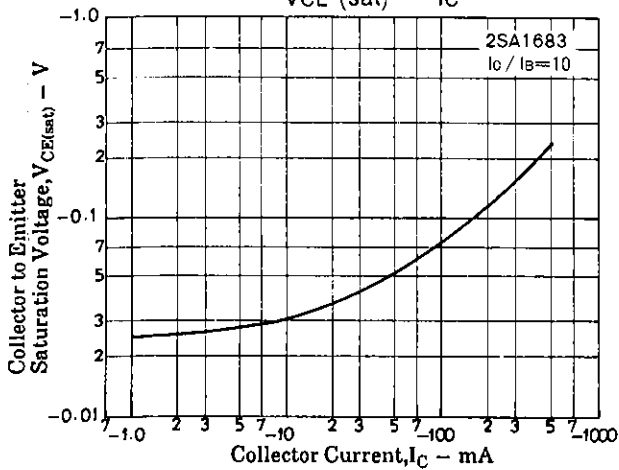
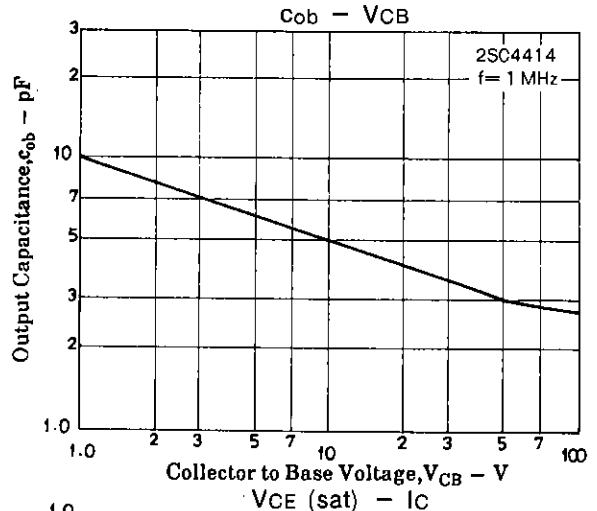
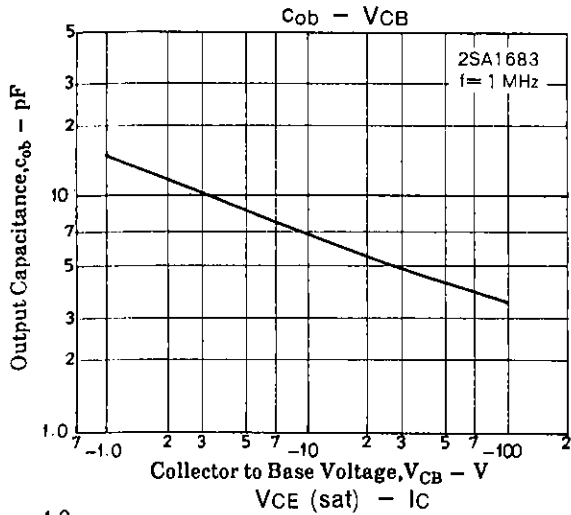
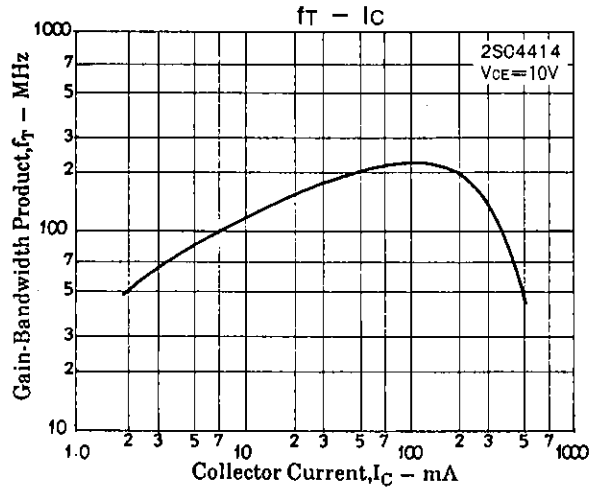
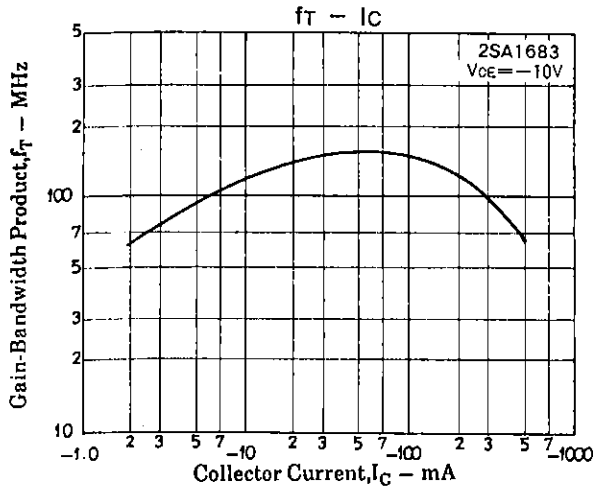
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